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Pedogenesis of Some Hydromorphic Soils of Terai Region of West Bengal, India

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Abstract—Hydromorphic soils can be identified by the determination of hydromorphic index (HI), particle distribution ratios and CEC/clay using details soil survey database followed by their appropriate classification in USDA Soil Taxonomy. Results of the study indicate that soils were dark gray in matrix colour with occurrence of nodules of iron (ferrous and manganese manganous) in reduction phases at a depth below 18 to 22 cm along with redoximorphic depletions at a depth below 42 to 59 cm in lower piedmonts and older alluvial plains. Hydromorphic index (HI) varied from 20.6 in soils of older alluvial plains to 4.5 in soils of active alluvial plains following the order as Older alluvial plains (20.6) > Lower piedmont (17.6) > Older meander plains (5.8) > Younger alluvial plains (5.5) > Active alluvial plains (0.45). These index exhibited significant relationship with soil physical and chemical properties. In these soils, the rate of accumulation of organic matter tends to exceed the rate of its decomposition. The criteria considered for confirmation and establishment as hydromorphic soils could be a useful information for management of these soils for better productivity and land uses.

Key words: Hydromorphic soils, Hydromorphic index, Landforms, Particle size ratio, Terai region.